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RELATION BETWEEN BUTT ROT AND FIRE IN SOME EASTERN HARDWOODS

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APPALACHIAN FOREST EXPERIMENT STATION

Relation Between Butt Rot and Fire in Some Eastern Hardwoods

The following table is based upon the study of 5,883 trees cut in eight eastern States from New Jersey through Tennessee. Areas were chosen on commercial logging operations and data were taken on all trees cut by the operators on these areas. Logs were scaled by the Scribner Decimal C log rule. The method of scaling and making deductions for defect is explained in Technical Note No. 13 of this Station, "Relation Between Tree Diameter and Percentage of Cull in Some Eastern Hardwoods."

Species	<u>1/</u>							
	Trees with basal fire wounds				Trees without basal wounds			
	No.	Aver. %	% Trees	Cull %	No.	Aver. %	% Trees	Cull %
	of	:	with	due to	of	:	with	due to
	trees:	d.b.h:	butt rot:	butt rot:	trees:	d.b.h:	butt rot:	butt rot
Basswood	56	19.7	100	39.3	59	17.4	44	13.1
Yellow Poplar	135	25.2	88	20.7	149	21.9	5	.4
Chestnut Oak	366	19.9	79	18.5	361	14.7	3	1.5
Scarlet Oak	673	14.2	64	16.4	589	13.8	5	.8
Northern Red	:	:	:	:	:	:	:	:
Oak	403	20.7	72	13.3	406	17.3	8	2.2
Black Oak	411	16.0	58	12.9	478	15.8	2	.4
White Oak	671	18.4	61	11.6	783	16.6	6	1.2
Post Oak	157	17.1	52	5.6	185	17.2	4	.8
	:	:	:	:	:	:	:	:
All species	:	:	:	:	:	:	:	:
(weighted)	2872	17.9	67	15.5	3010	16.1	6	1.5
	:	:	:	:	:	:	:	:

1/ 3% of these trees had wounds recorded as not caused by fire.

This table shows that of the trees recorded as having no basal wounds only 6% showed butt rot at stump height, while of the scarred trees 67% showed butt rot. The cull percent due to butt rot for all of the trees without basal wounds was 1.5 as compared to 15.5 for the trees with basal wounds. 94% of all of the butt rot was in scarred trees.

Of the total volume culled in this study 77% was due to butt rot, 20% was due to top rot, and 3% to miscellaneous defects such as crook and fork. If, as shown in the table above, trees wounded at the base have about ten times as much butt defect as unwounded trees, and if 97% of the basal wounds are caused by fire, then the elimination of fire would mean reducing the total present cull volume from all sources (butt rot, top rot, and other) for these hardwoods to about one-third its present total. This figure is conservative because it is based only on the merchantable trees. Many of the trees left as unmerchantable were in that condition as a result of fire-scarring followed by decay. It is also conservative because some of the butt-rotted trees recorded as having no basal wounds may have had small healed scars which did not extend to stump height, but which nevertheless may have served as starting points for the decay.

The stands studied were mainly of seedling origin, and the conclusions apply only to such trees. In the sprout stands that develop as the result of repeated cutting on short rotation, butt rot more often occurs independently of fire scars.

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